

### **REMARKS**

Claims 1-3, 5, 7, 8, 10-14 and 16-18 are pending in this application. In the outstanding Office Action, claims 1- 3, 10-13 and 18 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over United States Patent Application No. 2002/0107483 (“Biebesheimer”) in view of United States Patent Number 6,507,841 (“Riverieulx”). Claims 5, 7, 8, 14, 16 and 17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Riverieulx in view of United States Patent No. 6,434,547 (“Mischelevich”). Applicants respectfully traverse.

Claims 1, 5, 11-12, 14 and 18 have been amended.

### ***Interview Summary***

On September 2, 2008, Examiner Brent Stace and Applicants’ undersigned representative, Mr. Eiferman, participated in a telephonic interview. During the interview, Mr. Eiferman proposed the claim amendments herein. Examiner Stace agreed to reevaluate the pending rejections in light of the claim amendments and remarks herein.

### **Claim Rejections Under § 103(a)**

#### **Claims 1-3**

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable under Biebesheimer in view of Riverieulx. Claim 1 as amended recites in part a method for improving performance of a search mechanism, which incorporates a browser for user interaction, comprising *detecting an event relating to an interaction of the user with the browser, providing the event as input to a state machine, the state machine comprising a plurality of states, each state corresponding to a state of user interaction with the browser and a state transition function, the state transition function mapping a first state and an event to a second state, whereupon the event causes a transition of the state machine from a current state to a new state based upon the event and the state transition function and determining context information based upon the new state of the state machine.*

Claim 1 as amended further recites *determining implicit user feedback data based upon the transition from the current state to the new state, wherein the implicit user feedback data reflects user behavior during a search and includes user behavior while visiting a result list page, user behavior while exploring a hyperlink on a result list page, user behavior for visiting a result item page or result item ignore behavior.*

Claim 1 as amended further recites collecting explicit user feedback data by *identifying at least one non-selected search result that is generated by the search mechanism as part of said search but that is not selected by the user, submitting one or more questions to the user regarding the non-selected search result and receiving explicit user feedback data to said questions, said questions prompting the user for explicit reasons why a non-selected search result failed to correspond to a search request and utilizing the implicit user feedback data, the explicit user feedback data in light of the context information to identify a problem with the search mechanism.*

Support for this amendment may be found, for example, on pages 10-14 of the application. Briefly summarizing this discussion, a browser 200 may interact with a browser helper object 210, which provides information to a behavior tracer 220 including a state machine. The behavior tracer 220 may provide data output to a data acquisition engine 230.

The state machine 225 works to detect the contours of the search session, e.g., when it starts, when it finishes and what occurs during the search session, and may undergo a transition, for example, upon events corresponding to queries for feedback (such as feedback on a specific result or on a query in general) and user queries for state (for example, when a modified search may or may not be part of a new query, the user may be asked whether the user intended to continue the same query or state a new query).

The browser helper object 210 may detect events (i.e., raw user behavior), which may include user navigation from one page to another, clicking on a hyperlinks, scrolling, closing a window, etc. The events may directly relate to a user's satisfaction with search results such as the user's repeating a query, the time it takes the user to click on an item in a results page, the user's dwell time, etc. Once the raw user behavior data is captured, the information may be passed to a user behavior tracer 220. The events may be used in two ways by the user behavior tracer. First, the events may be stored as or used to calculate implicit feedback data (e.g., time spent on page, mouse movements and clicks, etc.).

Second, the raw user behavior data may be used cause a transition from one state to another or to trigger an event in the state machine. The state machine 225 tracks the possible states of a search, e.g., when the user has finished the evaluation of a particular result, when the user is done with a particular query and when questions need to be asked of users, such as what feedback the user has on a particular result item or in the query as a whole. Similar events, which are detected by the browser helper object 210 may mean different things, depending on what stage of the search session is currently occurring.

Three types of data may be acquired by the data acquisition engine 230 through the user behavior tracer 220. First, context data may be acquired that concerns the query or queries that a user used during a search. Context data may include data such as the state of the search as represented by the state machine and associated timing, behavior data regarding the user's use of the browser 200 and responses to user queries as to the intent of the user's behavior. Second, implicit user feedback data may be acquired that reflects user behavior throughout a search session, such as page browsing, scrolling, clicking, etc. This implicit user feedback data may be used along with other data to drive transitions between the states of the state machine 225. The implicit user behavior data is not necessarily the raw user behavior data stream sent by the browser helper object 210. For example, the raw data may be interpreted and stored as four types of implicit feedback data including: (a) user behavior while visiting a result list page, including the time spent at that result; (b) user behavior while exploring a hyperlink on the result list page, such as a search tip link, including the time spent at that result; (c) user behavior for visiting a result item page, including the time spent at that result and other actions such as scrolling, printing or adding the document to the user's favorites; and, (d) result item ignore records.

The interpreted implicit user feedback data may correspond to the states in the state machine 225 and the interpretation of the raw user behavior data into interpreted user behavior data may be accomplished in the states of the state machine as the states are being traversed.

Finally, a third type of data is acquired referred to as explicit user feedback data. The explicit user feedback data is explicit user feedback regarding why a non-selected search result failed to correspond to a search query, which has been requested about the result items

the user visited and the query the user submitted. For example, regarding a specific result which the user ignored the user may be asked “Why didn’t you try this result?” and provided choices including “I didn’t think this would answer my question.

Biebesheimer relates to a customer self-service subsystem for classifying user context, which performs resource search and selection and includes a contexts attribute database comprising types of user contexts and one or more context attributes associated with each user context for processing by the system and a context attribute function database comprising functions for computing values for each context attribute.

The classifying system comprises a computing device for receiving a user query and a context vector comprising data associating an interaction state with the user and processing the query and context vector against data included in the context attribute data base and context attribute function database for predicting a particular user context.

Riverieulx relates to a method of indexing data items to enable retrieval of those items comprising storing items in a complete form, storing association relationships between the stored data items and descriptors associated with the stored data items, receiving a search request including a descriptor from a user for selection of stored data items, wherein the request incorporates at least one descriptor, sending the user a search result including a summary form of the stored data items selected in accordance with the search result and modifying the stored association relationship between the stored data items and the stored descriptors in response to the user responding to the sent search result by requesting the complete form of selected data item in a search result.

Neither Biebesheimer nor Riverieulx taken alone or in combination teach or suggest detecting an event relating to an interaction of the user with the browser as recited in amended claim 1. The Examiner cites paragraph [0042] of Biebesheimer as relating to monitoring of a search mechanism for raw user behavior data regarding interaction of a user with a search mechanism. Paragraph [0042] describes an Adaptive Indexing of Resources Solutions and Resource Lookup sub-process, which maps specific contexts to specific resources. However, this has nothing to do with detecting events relating to a user interaction with a browser. In particular, a context vector as described in Biebesheimer is not an event.

Further, neither Biebesheimer nor Riverieulx alone or in combination teaches or suggests providing an event as input to a state machine, the state machine comprising a

plurality of states, each state corresponding to a state of user interaction with the browser and a state transition function, the state transition function mapping a first state and an event to a second state, whereupon the event causes a transition of the state machine from a current state to a new state based upon the event and the state transition function as required by amended claim 1. There is no teaching in either of Biebesheimer or Riverieulx of a state machine comprising a plurality of states mapping to a state of user interaction with a browser and a state transition function mapping a first state and an event to a second state. In particular, none of the references cited by the Examiner disclose anything resembling a state machine that receives an event relating to a user interaction with a browser as input as required in claim 1.

Accordingly, neither Biebesheimer nor Riverieulx taken alone or in combination can teach or suggest determining context information based upon a new state machine as required by claim 1, as those reference fail to teach or suggest a state machine having the described characteristics. Further, neither Biebesheimer nor Riverieulx can teach or suggest determining implicit user feedback data based upon the transition from a current state to a new state, wherein the implicit user feedback data reflects user behavior during a search and includes at least one of user behavior while visiting a result list page, user behavior while exploring a hyperlink on a result list page, user behavior for visiting a result item page and result item ignore behavior as those references fail to teach or suggest a state machine as recited in claim 1.

Further, Biebesheimer and Riverieulx fail to teach or collecting explicit user feedback data by identifying at least one non-selected search result that is generated by the search mechanism as part of said search but that is not selected by the user, submitting one or more questions to the user regarding the non-selected search result and receiving explicit user feedback data to said questions, said questions prompting the user for explicit reasons why a non-selected search result failed to corresponds to a search request. Riverieulx discloses receiving explicit feedback from users on how useful or relevant a search was, it does not teach or suggest submitting questions to a user regarding non-selected search results and explicit reasons why a non-selected search result failed to correspond to a search result.

Since neither Biebesheimer nor Riverieulx alone or in combination teach or suggest determining context information, implicit user feedback nor explicit user feedback, those

references certainly cannot teach or suggest utilizing implicit user feedback data, explicit user feedback data in light of context information to identify a problem with the search mechanism as recited in amended claim 1.

As neither Biebesheimer nor Riverieulx taken alone or in combination teach or suggest the cited claim limitations, claim 1 should be allowed.

Claims 2-3 depend from and therefore include all the limitations of claim 1. Thus, for at least the reasons stated with respect to claim 1, claims 2-3 should be allowed.

### **Claims 5 and 7-8**

Claims 5 and 7-8 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Riverieulx in Mishelevich. Claim 5 as amended recites limitations similar to claim 1 including *providing an event as input to a state machine, the state machine comprising a plurality of states, each state corresponding to a state of user interaction with the browser and a state transition function, the state transition function mapping a first state and an event to a second state, whereupon the event causes a transition of the state machine from a current state to a new state based upon the event and the state transition function*. Claim 5 as amended further recites *determining context information based upon the new state of the state machine and determining implicit user feedback data based upon the transition from the current state to the new state*. As Mishelevich fails to cure the deficiencies of Riverieulx and Biebesheimer, claim 5 should be allowed. Claims 7-8 depend from and therefore include all the limitations of claim 5. Thus, for at least the reasons stated with respect to claim 5, claims 7-8 should be allowed.

### **Claim 10**

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable under Biebesheimer in view of Riverieulx. Claim 10 as amended recites limitations similar to claim 1 including *detecting an event relating to an interaction of the user the browser, providing the event as input to a state machine, the state machine comprising a plurality of states, each state corresponding to a state of user interaction with the browser and a state transition function, the state transition function mapping a first state and an event to a second state, whereupon the event causes a transition of the state machine from a current state to a*

*new state based upon the event and the state transition function, determining context information based upon the new state of the state machine and determining implicit user feedback data based upon the transition from the current state to the new state.* Thus, for at least the reasons stated with respect to claim 1, claim 10 should be allowed.

### **Claims 11-13**

Claims 11-13 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable under Biebesheimer in view of Riverieulx. Claim 10 as amended recites limitations similar to claim 1 including *a state machine for conversion of the raw user behavior data into interpreted user behavior data and for generating context information, wherein the context information corresponds to a current state of the state machine.* Thus, for at least the reasons stated with respect to claim 1, claim 11 should be allowed. Claims 12-13 depend from and therefore include all the limitations of claim 11. Thus, for at least the reasons stated with respect to claim 11, claims 12-13 should be allowed.

### **Claims 14 and 16-17**

Claims 14 and 16-17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Riverieulx in Mishelevich. Claim 14 as amended recites limitations similar to claim 1 including *a context monitor for monitoring a search mechanism for search mechanism response data regarding a search and an explicit user feedback data accumulator for identifying at least one non-selected search result that is generated by the search mechanism as part of said search but that is not selected by the user.* Thus, for at least the reasons stated with respect to claim 1, claim 14 should be allowed. Claims 16-17 depend from and therefore include all the limitations of claim 14. Thus, for at least the reasons stated with respect to claim 14, claims 16-17 should be allowed.

### **Claim 18**

Claim 18 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable under Biebesheimer in view of Riverieulx. Claim 18 as amended recites limitations similar to claim 1 including *a context monitor for monitoring said search mechanism wherein the context monitor comprises a state machine, the state machine comprising a plurality of*

*states, each state corresponding to a state of user interaction with the search mechanism and a state transition function, the state transition function mapping a first state and an event to a second state, whereupon an event generated by user interaction with the search mechanism causes a transition of the state machine from a current state to a new state based upon the event and the state transition function, wherein the context monitor determines context information based upon the new state of the state machine.* Thus, for at least the reasons stated with respect to claim 1, claim 18 should be allowed.



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### **Conclusion**

In view of the above amendments and remarks, applicant respectfully submits that the present invention is in condition for allowance. Reconsideration of the application is respectfully requested.

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/Kenneth R. Eiferman/

Kenneth R. Eiferman

Registration No. 51,647

Woodcock Washburn LLP  
Cira Centre  
2929 Arch Street, 12th Floor  
Philadelphia, PA 19104-2891  
Telephone: (215) 568-3100  
Facsimile: (215) 568-3439